Patterns of drug screen results and court-ordered substance use treatment referrals and completion among justice-involved youth

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This is the author's manuscript of the article published in final edited form as:

Dir, A. L., Clifton, R. L., Magee, L. A., Johnson-Kwochka, A. V., Wiehe, S. E., & Aalsma, M. C. (2020). Patterns of drug screen results and court-ordered substance use treatment referrals and completion among justice-involved youth. Journal of Substance Abuse Treatment, 118. https://doi.org/10.1016/j.jsat.2020.108095

Abstract

Background: Substance use is prevalent among justice-involved youth and given the risk of recidivism and other poor outcomes associated with substance use, justice systems have implemented efforts to improve substance use screening and connection to treatment. Although many justice systems use drug screening to monitor substance use, research on patterns of substance use based on drug screen records is lacking. The current study examined court records of drug screens among youth to explore patterns of substance use as well as rates of court-ordered referral to substance use treatment and treatment completion. We also examined differences in these patterns of use and treatment referral and completion by race, ethnicity, and gender.

Method: We examined court records for N=3,440 youth with records of positive oral drug screen (ODS) between 2011 and 2016 to assess patterns of ODS results (e.g., number and of positive screens), court-ordered referrals to substance use treatment, and rates of treatment completion.

Results: Of 3,440 youth with a positive ODS, 96% tested positive for cannabis and 9.8% for opioids at least once; 48.5% were court-ordered to substance use treatment. Of those referred, 67% had history of completing at least one treatment episode; black youth (OR=0.54, $p<.01$) were less likely to have history of completing substance use treatment.

Conclusion: Our results underscore the need to utilize objective measures as well as validated self-reports of substance use history in both research and justice system decision-making to aid in identifying youth in need of services. Additional research should identify barriers to substance use treatment completion among this population.

Keywords: Justice-involved youth; Drug screening; Substance use; Substance use treatment; Adolescents

1. Introduction

Rates of substance use among justice-involved youth (JIY) are higher compared to their nonoffending peers (Horowitz et al., 2006). Almost 70% of JIY have lifetime drug involvement (Belenko & Logan, 2003), and up to one-third meet criteria for substance use disorders (Wasserman et al., 2010). Given that substance use is associated with poorer health outcomes and prolonged justice system involvement (Van der Put, Creemers, & Hoeve, 2014), justice systems have attempted to improve outcomes for JIY through monitored drug screening and referral to substance use treatment (Belenko et al., 2017). The current study examines patterns of substance use based on drug screening among justice-involved youth as well as associations among drug screening results, referrals to substance use treatment, and completion of substance use treatment.

1.1 Prevalence of substance use among justice-involved youth

Cannabis is the most widely used substance among JIY, with estimates of lifetime use ranging from 40% to 90% (Grigorenko, Edwards, & Chapman, 2015; Racz et al., 2016; Feldstein & Ginsburg, 2006). Estimates of lifetime use of other substances vary: 32%–89% for alcohol (Hirschtritt et al., 2018; Lebeau-Craven et al., 2003; Vaughn et al., 2005), 3%–14% for crack/cocaine (Conrad et al., 2017; Morris et al., 1995), 2% for opioid/heroin (Wiley et al., 2018), and up to 20% for other drugs (hallucinogens, ecstasy) (Conrad et al., 2017; Braithwaite et al., 2003). Studies of substance among JIY use also find differences in patterns of substance use across race, ethnicity, and gender, with white youth reporting more use than racial/ethnic minority youth and males reporting more use than females (Ewing et al., 2011). One limitation of the existing research is that most of these studies rely on self-reports of lifetime substance use

(e.g., Hunter et al., 2014), and less is known about patterns of use during system involvement (e.g., frequency of use, polysubstance use). To date, few studies have used court records of objective drug screen results during system involvement (Dembo et al., 2009), which offers a more dynamic illustration of substance use during system involvement that is not captured with retrospective self-reports.

1.2 Justice system and referral to substance use programs

Justice system involvement presents an opportunity to receive rehabilitative services, such as mental health and substance use treatment (Belenko et al., 2017), and engagement in services has been shown to reduce recidivism (Hoeve et al., 2013). Despite the potential benefit of substance use treatment, including reducing recidivism risk (Henggeler & Schoenwald, 2011; Hoeve et al., 2013), rates of referrals to substance use treatment are low across jurisdictions (Funk et al., 2020; Spinney et al., 2016; White, 2019). Belenko and colleagues (2017) created the juvenile justice behavioral health services cascade to better understand gaps in the process from the point of identifying youth in need of services to connecting them to services and to completing treatment. There are eight steps in the cascade: referral, screening, clinical assessment, need identification, juvenile justice refers to treatment, treatment initiated, engaged in treatment, and continuing care (Belenko et al., 2017). Building on recent research (Belenko et al., 2017; Kaeble & Glaze, 2016), the current study examines three points in the service cascade in one jurisdiction: justice system's' role in identifying youth, referring youth to treatment, and court-documented treatment completion. Many justice systems utilize drug screening for monitoring and decision-making; however, research utilizing court records of drug screen results is limited. We examine patterns of substance use based on drug screening records as well as rates

of court-ordered referral to substance use treatment and patterns of court-documented treatment completion among a large sample of justice-involved youth.

2. Methods

2.1 Participants

Following IRB approval, we identified a sample of 16,471 youth with any involvement in a midwestern urban juvenile justice system between 2011 and 2016. Thirty-three percent of all youth received drug screens (N=5,534). Of that sample, 62% of youth had at least one positive drug screen (N=3,440 individuals) at some point during their involvement with the justice system (between 2011 and 2016). Our analyses focus on the 3,440 youth with any positive drug screen to examine how the court responds to youth with positive drug screens. Drug results are based on oral drug screens (ODS) (Quantisal Oral fluid kids). Drug screening occurred either at intake (i.e., following arrest or referral) or later as part of formal or informal probation.

2.2 Measures

We examined history of positive ODS results for all youth based on electronic court records. We created dichotomous variables to denote any history of positive ODS for cannabis, hallucinogens or ecstasy, cocaine, benzodiazepines, methamphetamine, and opioids, as well as positive breathalyzer test for alcohol. We also examined history of polysubstance use, defined as multiple positives in one drug screen result.

We examined court-documented referrals to substance use treatment (residential, outpatient, inpatient) at any point following a youth's first positive ODS. For each substance use treatment referral, we examined court-documented completion or noncompletion of treatment. We created a dichotomous variable representing *any* history of court-documented treatment

completion. Treatment noncompletion may denote that treatment was never started or that treatment was not completed as required by the court.

2.3 Statistical analyses

In addition to examining patterns of drug screen results, we utilized chi-square and multivariate logistic regression analyses to examine (1) referral to substance use treatment and (2) completion of substance use treatment. For regression analyses, we entered ethnicity, race, age, gender, and dichotomous variables for history of each type of substance as independent variables.

3. Results

3.1 Positive ODS

Of 3,440 youth with positive ODS, 96% of youth tested positive for cannabis at least once, 9.8% for benzodiazepines, 9.4% for opioids, 8.7% for alcohol, 6.9% for cocaine, and less than 2.0% for methamphetamines and hallucinogens or ecstasy (Table 1); 28.8% (n=992) tested positive for multiple substances in one drug screen result (polysubstance use) at least once (M=1.31, SD=0.60). Among youth with ≥3 ODS results, on average 54.3% were positive. Those with history of alcohol/cannabis only had a significantly lower frequency of positive ODS (39%) compared to those with a history of other positive ODS (p<.001; from 44% opioids to 55% methamphetamines).

Benzodiazepines (χ^2=10.11), opioids (χ^2=21.66), methamphetamines (χ^2=10.30), and alcohol (χ^2=13.51) were more common among females compared to males, while cannabis was more common among males (χ^2=70.65; ps<.05). Males had a significantly higher positive ODS frequency (42% vs. 37%; p<.001); there were no differences in rates of polysubstance use by gender.

Across race, benzodiazepines (χ^2=14.50), opioids (χ^2=12.51), methamphetamines (χ^2=41.18), and alcohol (χ^2=146.31) were most common among white youth (*p*s<.01); cannabis use was more common among black and multiracial youth (χ^2=133.45, *p*<.01). Polysubstance use was more common among black youth compared to other racial groups (χ^2=22.54, *p*<.01). There were no differences in positive ODS frequency (41% vs. 39%; *p*=.15).

Across ethnicity, cocaine (χ^2=39.75) and alcohol (χ^2=34.70) were more common among Hispanic youth (*p*'s<.05). There were no differences in positive ODS frequency or polysubstance use (*p*'s>.05).

3.2 Substance use treatment referral and completion

Of the sample, 48.5% of youth were referred to complete substance use treatment at one point following their first positive ODS. Among youth referred, 67% had history of at least one court-documented treatment completion (*n*=143 had missing data regarding completion).

3.3 Logistic regression

3.3.1 Substance use treatment referral. Hispanic (*OR*=1.43) and male (*OR*=0.49) youth were more likely to be referred to substance use treatment. Those with history of positive ODS for cannabis (*OR*=5.17), benzodiazepines (*OR*=1.46), and opioids (*OR*=1.42) were more likely to be referred to treatment (*p*'s<.05). There were no differences across race (Wald=4.03, *p*=.55).

3.3.2 History of court-documented substance use treatment completion. Black youth had significantly lower odds of successfully ever completing court-documented treatment compared to white youth (*OR*=0.54, *p*<.01); there were no other differences across race (*p*<.10). Thus, we conducted follow-up analyses stratified by white and black youth to examine potential effects of type of substance on court-documented treatment completion. Among white youth, history of cannabis (*OR*=0.25) and cocaine (*OR*=0.46) use were associated with lower odds of

completing treatment (*p*s<.05). Among Black youth, there were no differences based on history of any ODS result (*p*s>.10).

4. Discussion

The current study examined patterns of ODS results, referral to substance use treatment, and rates of court-documented substance use treatment completion among justice-involved youth with a history of positive ODS. Hispanic and male youth were more likely to be court-ordered to substance use treatment; further, history of cannabis, benzodiazepine, and opioid use increased odds of treatment referral. While there were no differences across race in referrals to treatment, white youth had significantly higher odds of ever completing treatment compared to Black youth.

Findings for differences in likelihood of treatment completion among Black and white youth underscore the extant literature on racial disparities in the justice and behavioral health system (Ewing et al., 2011; Neff & Waite, 2007; Spinney et al., 2016; White et al., 2019). Although reasons for noncompletion are unknown, these results are consistent with the literature that highlights lower rates of service utilization and engagement among Black youth (Saloner et al., 2014; White, 2019). Our results suggest that factors other than substance use may impact substance use treatment completion. Lower treatment completion among Black youth could be due to factors such as stigma (Alvidrez et al., 2008; Rose et al., 2011) as well as culturally inappropriate treatment (Alegría et al., 2011; Ewing et al., 2012), as evidenced in findings for racial disparities in substance use treatment among the broader adolescent population. Thus, further research is needed to better understand these disparities to improve treatment outcomes for Black and other minority youth.

The low rates of treatment referrals among this sample of youth with court-documented substance use is consistent with findings across other jurisdictions (Spinney et al., 2016). In addition to lack of system standardized substance use screening procedures, one reason for low rates of referrals—as well as low rates of treatment completion—may be related to a weak relationship between justice systems and community agencies providing services (Scott et al., 2019). Increasing collaboration between these systems, such as through improving care coordination (e.g., sharing case management duties such as providing transportation), could increase justice systems' likelihood of referring youth to treatment as well as improve treatment engagement and retention (Scott et al., 2019; Taxman & Belenko, 2012).

To date, the majority of research on substance use among JIY has utilized retrospective self-reports of substance use; however, the findings from the current study offer novel insight into youth's substance use during justice system involvement utilizing ODS records, rather than substance use based on lifetime self-reports of use. Using objective measures of substance use such as drug screens that capture active substance use could allow researchers to examine trajectories of use, such as escalation or reductions in use, and factors associated with these trajectories. Such data could also be used to better understand juvenile staff's decision-making, such as decisions regarding youth who continue to test positive despite probation-ordered drug testing or who show escalation in substance use.

This study is not without limitations. First, rates of substance use were based only on those with ODS records, and there are likely many youth who do not get screened who were actively using substances. Second, ODS records offer only a small window into actual substance use patterns. There are likely many youth with negative ODS results with a substance use history who were unidentified as well as youth with positive ODS who used other substances that were

unidentified. This is certainly the case with alcohol, as a breathalyzer captures only alcohol in one's system, and is limited to a window of hours; other substances have varying windows during which they can be detected via a drug screen. Similarly, we cannot identify problem use or SUD with ODS records. Nonetheless, our use of ODS records in the current study is novel and provides insight into patterns of active substance use during youth's justice system involvement and understanding of the process for identifying youth in need of services. Use of both validated substance use screening measures as well as objective drug screening methods are necessary for research and for justice decision-making. Third, data regarding treatment initiation, retention, and/or completion were not available. These data are pertinent from both a research and system-level perspective. For one, more detailed data could help us to better understand gaps in the service cascade (Dennis et al., 2019); additionally, having court personnel understand whether a youth previously referred to services had never been connected to services or had initiated services and did not complete treatment could inform judicial decision-making. Details regarding type of treatment (e.g., modality, duration) and treatment quality—which could influence treatment engagement—were also missing. These limitations more broadly highlight issues with administrative data, and in this case court records, which are often subject to error (Aalsma et al., 2019) and not always a reliable source of information regarding treatment or service utilization (Dennis et al., 2019; Scott et al., 2019). Last, the article focused on how the court responds to positive ODS results; additional research should examine differences in judicial decision-making among youth with and without history of positive ODS.

Results underscore the extent of substance use among justice-involved youth as well as the need for additional research to understand justice system processes for identifying youth in need of services and service delivery issues to improve the treatment cascade for this vulnerable

population.

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Table 1
Study demographics and variables.

	Substance Use Treatment Referral (N=1669)	No Substance Use Treatment Referral (N=1771)	
Gender			χ^2=72.16**
Male	1464 (87.7%)	1355 (76.5%)	2819 (82%)
Female	204 (12.2%)	413 (23.3%)	617 (18%)
Ethnicity			Fisher's *p*=.02
Hispanic	151 (9.0%)	121 (6.8%)	272 (8.2%)
Non-Hispanic	1476 (88.4%)	1588 (89.7%)	3064 (91.8%)
Race			χ^2=2.58
White	606 (36.3%)	578 (32.6%)	1184 (34.4%)
Black	1010 (60.5%)	958 (54.1%)	1968 (57.3%)
Asian	3 (0.2%)	3 (0.2%)	6 (0.2%)
American Indian	2 (0.1%)	0	2 (0.1%)
Multiracial	133 (8.0%)	118 (6.7%)	251 (7.3%)
No. treatment referrals	1.29 (0.57)		
Completion rate average (with >1 program)	50.76% (39.01%)		
History of any treatment completion	1119 (67.0%)		
Positive ODS history[1]			
Alcohol (breathalyzer)	146 (8.7%)	154 (8.7%)	300 (9%)
Cannabis	1607 (96.3%)	1498 (84.6%)	3105 (93.2%)**
Hallucinogens or Ecstasy	25 (1.5%)	23 (1.3%)	48 (1.4%)
Cocaine	139 (8.3%)	98 (5.5%)	237 (7.1%) **
Benzodiazepines/sedatives	197 (11.8%)	141 (8.0%)	338 (10.1%) **
Methamphetamine	36 (2.2%)	27 (1.5%)	63 (1.9%)
Opioids	179 (10.7%)	146 (8.2%)	325 (9.8%) *
Polysubstance use[2]	1.38 (0.64)	1.23 (0.54)	1.31 (0.64)**

Note. *p<.05. **p<.01. [1]Statistics denote any history of positive ODS for each substance type. [2]Values are mean number of substances tested positive for in one screen.

Table 2
Logistic Regression of likelihood of treatment referral and treatment completion.

	SU Treatment Referral	SU Treatment Completion[1]	
		White (n=585)	Black (n=947)
Race (referent: white)	Wald (*df*=5) = 4.03	-	-
Ethnicity (1=Hispanic)	1.43*	0.74	-
Gender (1=female)	0.46**	0.97	0.98
Cannabis (=1)	5.17**	0.25**	0.71
Hallucinogen or Ecstasy (=1)	0.99	1.50	1.43
Cocaine (=1)	1.31	0.46**	0.87
Benzodiazepines (=1)	1.45**	0.69	1.17
Methamphetamine (=1)	1.54	0.68	0.39
Opioids (=1)	1.42*	0.72	0.80

Note. *p<.05. **p<.01. [1] Regressions stratified by white & black youth.

Author Disclosures

Role of Funding Source
This work was supported by grants from the U.S. DHHS, Health Resources and Services Administration (R40MC08721, PI: Matthew C. Aalsma) and the Agency for Healthcare Research and Quality (R01HS022681, PI: Matthew C. Aalsma; R01HS023318, PI: Sarah E. Wiehe). These agencies did not have any role in the design and conduct of the study; collection, management, and data analysis; or preparation, review, or approval of the manuscript.

Contributors
Dir completed statistical analyses and wrote the manuscript. Clifton, Magee, and Johnson-Kwochka contributed to manuscript writing. Aalsma and Wiehe edited the manuscript as well as provided data and funding source. All authors contributed to and have approved the final manuscript.

Conflict of Interest
No conflict declared.

Acknowledgments
None.

Conflict of Interest
Authors have no conflicts of interest to disclose.

Contributors

Dir completed statistical analyses and wrote the manuscript. Clifton, Magee, and Johnson-Kwochka contributed to manuscript writing. Aalsma and Wiehe edited the manuscript as well as provided data and funding source. All authors contributed to and have approved the final manuscript.

Highlights

- Substance use is prevalent among justice-involved youth
- Justice systems are increasing substance use screening and connection to treatment
- Court records were used to examined patterns of drug screen results and treatment
- Objective measures of use help us understand the needs of justice-involved youth